

Application No. 10/789,557

MICI 1003-2

REMARKS

In the Official Action mailed 09 June 2005, the Examiner reviewed claims 1-24. The Examiner has rejected claims 1, 3, 4 and 22 under 35 U.S.C. §102(b); rejected claims 1 and 2 under 35 U.S.C. §103(a); rejected claim 6 under 35 U.S.C. §103(a); rejected claims 8, 10, 11 and 23 under 35 U.S.C. §103(a); rejected claim 9 under 35 U.S.C. §103(a); and rejected claim 13 under 35 U.S.C. §103(a). Claims 5, 7, 12, 14-21 and 24 are allowed.

Applicant has amended claims 1, 4, 6, 8 and 11; and canceled claims 22-24. Claims 1-21 remain pending.

The Examiner's rejections and objections are respectfully traversed below.

Rejection of Claims 1, 3, 4 and 22 under 35 U.S.C. §102(b)

The Examiner rejected claims 1, 3, 4 and 22 under 35 U.S.C. §102(b) as anticipated by Nakai et al. (U.S. Patent No. 5,670,069). Applicant has amended independent claims 1 and 4, as set forth above, and canceled claim 22. Reconsideration is respectfully requested in view of the amendments.

Claim 1 has been amended to recite that the baffle includes "an opening at the telescope focal point large enough to easily pass the output beam propagating to the target, and small enough to block off angle and out of focus back reflections from the target delivery optics." This subject matter was taken from claim 22, which is now canceled.

Nakai et al. describes a pinhole used for spatial filtering of the beam propagating toward the target. Therefore, it does not have an opening "large enough to easily pass the output beam propagating to the target" as required by claim 1 as amended. Nakai et al. describes the use of the pinhole to block "non-focusing components in a peripheral portion of a focusing spot" as it is propagating toward the target (Nakai et al., Abstract). Fig. 2 of Nakai et al. clearly shows the filtering action. The problem solved by Nakai et al. arises from the use of poorer quality lasers that contain many higher mode components. Therefore, to provide a higher quality beam to a target, spatial filtering is required. This problem is fundamentally different than the problem solved by the target isolation system subject to the present claims.

In the Official Action, the Examiner stated "Regarding claim 22, inherently the pinhole will reflect (or block) away some of the light reflected from the workpiece from passing to the laser system." Although this phenomena may occur in Nakai et al., the low power lasers described by Nakai et al. would not benefit from this feature, and there is no indication, stated or

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implied, that their system design had this as a goal. In addition, claim 1 as amended states that the opening of the baffle is large enough to easily pass the output beam propagating to the target. The Examiner apparently overlooked this limitation as recited in claim 22. The present invention has a relatively large baffle at the focus between the two lenses, which in some embodiments is large enough to allow alignment of the beam through the device to change, without the need for realignment. The system in Nakai et al. must be very precisely centered on the beam since, as explained in Nakai et al., the pinhole is smaller than the focused beam, causing a certain amount of the laser light to be removed from the beam.

The pinhole used as a spatial filter in Nakai et al. does not have an opening large enough at the focal point of the relay telescope, to easily pass the output beam as required in claim 1.

Claim 3 depends from claim 1, and is allowable for at least the same reasons.

Applicant as amended claim 4, to further specify the structure of the "tapered baffle". The Examiner has taken the position that the edge of the pinhole in Nakai et al. is tapered, and therefore meets the claim limitation. Claim 4 has been amended to specify that the length of the tapered surface of the baffle is at least 10 times the spot size at the focal point. This amendment is supported by the specification at page 23, lines 21-23.

Accordingly, reconsideration of the rejection of claims 1, 3 and 4, as amended is respectfully requested.

Rejection of Claims 1 and 2 under 35 U.S.C. §103(a)

The Examiner rejected claims 1 and 2 under 35 U.S.C. §103(a) as unpatentable over Hackel et al. (U.S. Patent No. 5,239,408) in view of Nakai et al. As mentioned above, claim 1 has been amended, and clearly distinguishes over Nakai et al. The Hackel et al. patent does not describe target delivery optics. Therefore, the combination of references does not include all the limitations in the claim.

Furthermore, persons of skill the art would not combine the target delivery optics of Nakai et al. with a high-powered, high quality laser described by Hackel et al. There is no suggestion that person would want to apply a spatial filter to the output of the Hackel et al. laser system. Use of such spatial filter, can in fact degrade beam quality by accentuating diffraction effects of the beam as it propagates.

Claim 2 recites structures used to implement the high-powered, high quality beam. No spatial filtering is required for the output of such laser.

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Accordingly, reconsideration of the rejection of claims 1 and 2, as amended, is respectfully requested.

Rejection of Claim 6 under 35 U.S.C. §103(a)

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as unpatentable over Hackel et al. in view of Nakai et al., and further in view of Walters et al. (U.S. Patent Application Publication No. 2004/0200341).

Claim 6 has been amended to incorporate the subject matter of its base claim, former claim 1. The Examiner relies on Walters et al. to suggest the energy per pulse and pulse length limitations recited in claim 6. However, the Examiner does not provide any reasons that persons of skill would be motivated to make the combination of Walters et al. with Hackel et al. and Nakai et al. Applicant submits that no such motivation to combine is apparent on this record.

Walters et al. is used for destroying buried land mines, by operating a solid-state laser system in a heat-capacity mode. Such system has no bearing on the present invention. The laser referred to by the Examiner at paragraph [0183] was used for testing the effects of the lasers on soil samples, and operated at power levels way below those that Walters et al. teaches their own purpose for destroying land mines. There is no suggestion whatsoever that such a high power pulse could be applied to a spatial filter such as taught by Nakai et al. Indeed, it is likely that such a high power pulse would destroy the pinhole of Nakai et al., and defeat the spatial filtering purpose of Nakai et al.

Accordingly, claim 6 is patentably distinct from the combination of references, and reconsideration is requested.

Rejection of Claims 8, 10, 11 and 23 under 35 U.S.C. §103(a)

The Examiner rejected claims 8, 10, 11 and 23 under 35 U.S.C. §103(a) as unpatentable over Toller et al. (U.S. Patent No. 6,127,649) in view of Nakai et al. Applicant as amended claims 8 and 11, and canceled claim 23. Reconsideration is requested therefore in view of the amendments.

Claim 8 has been amended in the manner discussed above in connection with claim 1. The Toller et al. patent describes a process chamber for laser peening. There is no beam delivery system similar to that recited in the claims of the present application described by Toller et al.

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Examiner relies upon Nakai et al. to suggest the beam delivery system, including the relay telescope with a baffle at the focal point. However, as discussed above, the problem solved by Nakai et al. is substantially different than that solved by the present invention. There is no evidence that one would apply the spatial filtering technique of Nakai et al. to a laser peening system.

Furthermore, even if combination were made by a person of skill in the art, the pinhole of Nakai et al. would not satisfy the claim limitations of a baffle having an opening large enough to easily pass the output beam toward the target.

Claim 10 depends from claim 8, and is allowable for at least the same reasons.

Claim 11 has been amended in the same manner as claim 8, and is allowable for at least the same reasons.

Accordingly, reconsideration of the rejection of claims 8, 10 and 11, as amended is respectfully requested.

Rejection of Claim 9 under 35 U.S.C. §103(a)

The Examiner rejected claim 9 under 35 U.S.C. §103(a) as unpatentable over Toller et al. in view of Nakai et al., and further in view of Hackel et al. Claim 9 depends from claim 8 as amended, and is patentable for at least the same reasons. Furthermore, the spatial filter of Nakai et al. solves a problem substantially different than the baffle recited in claim 8. Accordingly, persons of skill the art would not combine the references as suggested by the examiner.

Accordingly, reconsideration of the rejection of claim 9 is respectfully requested.

Rejection of Claim 13 under 35 U.S.C. §103(a)

The Examiner rejected claim 13 under 35 U.S.C. §103(a) as unpatentable over Toller et al. in view of Nakai et al., and further in view of Hackel et al. and Walters et al. Claim 13 depends from claim 8 as amended, and is patentable for at least the same reasons.

Furthermore, the spatial filter of Nakai et al. solves a problem substantially different than the baffle recited in claim 8. Also, as discussed above in connection with claim 4, Walters et al. is unrelated to laser shock peening, and unlikely to be used in combination with a pinhole spatial filter as taught by Nakai et al. Accordingly, persons of skill the art would not combine the references as suggested by the Examiner.

Accordingly, reconsideration of the rejection of claim 13 is respectfully requested.

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Allowed Claims

Claims 5, 7, 12, 14-21 and 24 were allowed. No changes to such claims have been made.

CONCLUSION

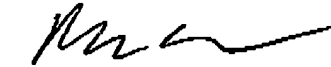
It is respectfully submitted that this application is now in condition for allowance, and such action is requested.

The Commissioner is hereby authorized to charge any fee determined to be due in connection with this communication, or credit any overpayment, to our Deposit Account No. 50-0869 (MICI 1003-2).

Respectfully submitted,

Dated:

21 Sept 05



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